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U.S. Department of Transportation
Federal Aviation Administration

INSTRUMENT RATING

Practical Test Standards

for

AIRPLANE

HELICOPTER

MARCH 1989

FLIGHT STANDARDS SERVICE
Washington, DC 20591

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INSTRUMENT RATING

Practical Test Standards

1989

FLIGHT STANDARDS SERVICE

FOREWORD

This Instrument Rating Practical Test Standards book has been published by the Federal Aviation Administration (FAA) to establish the standards for the instrument rating practical test for airplanes and helicopters. FAA inspectors and designated pilot examiners will conduct practical tests in compliance with these standards. Flight instructors and applicants will find these standards helpful in practical test preparation.

Robert L. Goodrich
Acting Director, Flight Standards Service

INTRODUCTION

The Aviation Standards National Field Office of the Federal Aviation Administration (FAA) has developed this practical test book as a standard to be used by FAA inspectors and designated pilot examiners when conducting airman practical tests (oral and flight tests). Instructors are expected to use this book when preparing applicants for practical tests.

This book sets forth the practical test requirements for the addition of an instrument rating to a pilot certificate in airplanes and helicopters.

This publication may be purchased on a subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

The FAA gratefully acknowledges the valuable assistance provided by organizations and individuals who have contributed their time and talent in development of the practical test standards.

Comments regarding this publication should be directed to:

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Federal Aviation Administration
Aviation Standards National Field Office
Examinations Standards Branch, AVN-130
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PRACTICAL TEST STANDARD CONCEPT

Federal Aviation Regulations (FAR's) specify the areas in which knowledge and skill must be demonstrated by the applicant before the issuance of an instrument rating. The FAR's provide the flexibility to permit the FAA to publish practical test standards containing specific TASKS (procedures and maneuvers) in which pilot competency must be demonstrated. The FAA will add, delete, or revise TASKS whenever it is determined that changes are needed in the interest of safety. Adherence to provisions of the regulations and the practical test standards is mandatory for the evaluation of pilot applicants.

FLIGHT INSTRUCTOR RESPONSIBILITY

An appropriately rated flight instructor is responsible for training the student to the acceptable standards as outlined in the objective of each TASK within the appropriate practical test standard. The flight instructor must certify that the applicant is able to perform safely as an

instrument pilot and is competent to pass the required practical test for the rating sought.

EXAMINER[1] RESPONSIBILITY

The examiner who conducts the practical test is responsible for determining that the applicant meets standards outlined in the objective of each TASK within the appropriate practical test standard.The examiner shall meet this responsibility by accomplishing an ACTION that is appropriate for each TASK. For each TASK that involves "knowledge only" elements, the examiner will orally quiz the applicant on those elements. For each TASK that involves both "knowledge and skill" elements, the examiner will orally quiz the applicant regarding knowledge elements and ask the applicant to perform the skill elements. The examiner will determine that the applicant's knowledge and skill meets the objective in all required TASKS. Oral questioning may be used at any time during the practical test.

The examiner may not assist the applicant in the management of the aircraft, radio communications, navigational equipment, and/or navigational charts. In the event the test is conducted in an aircraft operation requiring a crew of two, the examiner may assume the duties of the second in command. The examiner shall remain alert for other traffic at all times.

EMPHASIS ON ATTITUDE INSTRUMENT FLYING AND PARTIAL-PANEL SKILLS

The FAA is concerned about numerous fatal aircraft accidents involving spatial disorientation of instrument-rated pilots who have attempted to control and maneuver their aircraft in clouds with inoperative gyroscopic heading and attitude indicators.

Many of the light aircraft operated in instrument meteorological conditions (IMC) are not equipped with dual, independent, gyroscopic heading or attitude indicators and in many cases are equipped with only a single-vacuum source. Therefore, the FAA has stressed that it is imperative for instrument pilots to acquire and maintain adequate partial-panel instrument skills and that they be cautioned not to be overly reliant upon the gyro-instrument systems.

The Instrument Rating Practical Test Standards place increased emphasis on basic attitude instrument flying and require the demonstration of partial-panel, nonprecision instrument approach procedures.

Area of Operation III requires the performance of basic instrument flight tasks under both full-panel and partial-panel conditions. These tasks are described in detail in AC 61-27C, Instrument Flying Handbook, chapters V and VI. The TASKS require a knowledge of attitude instrument flying procedures and a demonstration of the skills to per-

[1] The word "examiner" is used throughout this standard to denote either the FAA inspector or FAA designated pilot examiner who conducts an official flight test.

form the basic instrument maneuvers with full-instrument-panel and with certain instruments inoperative. The attitude instrument flying system of teaching is described in AC 61-27C and is recommended by the FAA because it requires specific knowledge and interpretation of each individual instrument during training. The Instrument Flight Instructor Lesson Guide in AC 61-27C also provides a course of training which is designed to develop the student's partial-panel skills.

Examiners should determine that the applicant understands the PRIMARY and SUPPORTING method of instrument flying.

PRACTICAL TEST BOOK DESCRIPTION

This test book contains the practical test standard for the addition of an instrument rating to the private and commercial pilot airplane and rotorcraft/helicopter certificates.

The loose-leaf feature of this test book enables the distribution of revisions promptly to all subscribers. This will permit the dissemination of information concerning changes in regulations, pilot certification procedures, and other areas related to safety upon which emphasis should be placed.

PRACTICAL TEST STANDARD DESCRIPTION

The AREAS OF OPERATION are phases of flight arranged in a logical sequence within this standard. They begin with the flight's preparation and end with the flight's conclusion. The examiner, however, may conduct the practical test in any sequence that results in a complete and efficient test.

The abbreviations within parentheses immediately following a TASK title indicates whether the TASK is appropriate to airplanes, helicopters, or both. The meaning of the abbreviations follow:

IA Airplane
IH Helicopter

The number after the PILOT OPERATION relates that TASK to the regulatory requirement.

The REFERENCE identifies the publication(s) that describe(s) the TASK. Descriptions of TASKS are not included in the standard because this information can be found in the listed references. Publications other than those listed may be used for references if their content conveys substantially the same meaning as the referenced publications.

References upon which this practical test book is based include:

FAR Part 61	Certification: Pilots and Flight Instructors
FAR Part 91	General Operating and Flight Rules
AC 00-6	Aviation Weather

AC 00-45	Aviation Weather Services
AC 61-13	Basic Helicopter Handbook
AC 61-21	Flight Training Handbook
AC 61-23	Pilot's Handbook of Aeronautical Knowledge
AC 61-27	Instrument Flying Handbook
AC 61-84	Role of Preflight Preparation
AC 90-48	Pilot's Role in Collision Avoidance
AIM	Airman's Information Manual
SID	Standard Instrument Departures
STAR	Standard Terminal Arrivals
AFD	Airport Facility Directory
FDC NOTAM	National Flight Data Center/Notice to Airmen
IAP	Instrument Approach Procedures
	Pertinent Pilot Operating Handbooks and FAA-Approved Flight Manuals
	En Route Low Altitude Chart

NOTE: The latest revision of the references should be used.

The OBJECTIVE lists, in sequence, the important elements that must be satisfactorily performed to demonstrate competency in a TASK. The OBJECTIVE includes:

(1) specifically what the applicant should be able to do,
(2) the conditions under which the TASK is to be performed, and
(3) the minimum acceptable standards of performance.

USE OF THE PRACTICAL TEST BOOK

This practical test book contains only one practical test standard. The TASKS included in that standard apply to both airplanes and helicopters. In certain instances, notes describe differences in the performance of a TASK by an "airplane" applicant and a "helicopter" applicant. When using the practical test book the examiner must evaluate the applicant's knowledge and skill in sufficient depth to determine that the standards of performance listed for all TASKS are met.

All TASKS in this practical test standard are required for the issuance of an instrument rating in airplanes or helicopters. However, when a particular ELEMENT is not appropriate to the aircraft, its equipment, or operational capability, that ELEMENT, at the discretion of the examiner, may be omitted. Examples of these element exceptions would be high altitude weather phenomena for helicopters, integrated flight systems for aircraft not so equipped, or other situations where the aircraft or operation is not compatible with the requirement of the ELEMENT.

It is not intended that the examiner follow the precise order in which the AREAS OF OPERATION and TASKS appear in the test book. The examiner may change the sequence or combine TASKS with similar OBJECTIVES to conserve time. Examiners will develop a plan of action that includes the order and combination of TASKS to be dem-

onstrated by the applicant in a manner that will result in an efficient and valid test.

TASKS with similar OBJECTIVES may be combined to conserve time, although, the OBJECTIVES of all TASKS must be demonstrated and evaluated at some time during the practical test. It is of utmost importance that the examiner accurately evaluates the applicant's ability to perform safely as a pilot.

Examiners will place special emphasis upon areas of aircraft operation which are most critical to flight safety. Among these areas are positive aircraft control and sound judgment in decision making. Although these areas may not be shown under each TASK, they are essential to flight safety and will receive careful evaluation throughout the practical test. If these areas are shown in the OBJECTIVE, additional emphasis will be placed on them. The examiner will also emphasize division of attention, control touch, two-way radio communications, and other areas as directed by future revisions of this test book.

PRACTICAL TEST PREREQUISITES

An applicant for an instrument rating practical test is required by the FAR's to

(1) hold at least a current private pilot certificate with an aircraft rating appropriate to the instrument rating sought;

(2) pass the appropriate instrument rating written test since the beginning of the 24th month before the month in which the practical test is taken;

(3) obtain the applicable instruction and aeronautical experience prescribed for the instrument rating sought;

(4) possess at least a third-class medical certificate issued since the beginning of the 24th month before the month in which the flight test is taken; and

(5) obtain a written statement from an appropriately certificated flight instructor certifying that the applicant has been given flight instruction in preparation for the practical test within 60 days preceding the date of application. The statement shall also state that the instructor finds the applicant competent to pass the practical test and that the applicant has satisfactory knowledge of the subject area(s) in which a deficiency was indicated by the airman written test report.

AIRCRAFT AND EQUIPMENT REQUIREMENTS FOR THE PRACTICAL TEST

The applicant is required to provide an appropriate and airworthy aircraft for the practical test. Its operating limitations must not prohibit the TASKS required on the practical test. Flight instruments are those required for controlling the aircraft without outside references. The required radio equipment is that necessary for communications with ATC and for the performance of VOR, NDB, and ILS (glide slope, localizer, and marker beacon) approaches.

USE OF FLIGHT SIMULATOR OR TRAINING DEVICE

The applicant must demonstrate all of the instrument approach procedures required by FAR Part 61. At least one instrument approach procedure must be demonstrated in an airplane or helicopter, as appropriate. At the discretion of the examiner, the instrument approach(es) not selected for actual flight demonstration may be performed in a flight simulator or training device that meets the requirements of FAR Part 141.

SATISFACTORY PERFORMANCE

The ability of an applicant to perform the required TASKS is based on:

(1) executing TASKS within the aircraft's performance capabilities and limitations, including use of the aircraft's systems;
(2) executing emergency procedures and maneuvers appropriate to the aircraft;
(3) piloting the aircraft with smoothness and accuracy;
(4) exercising good judgment;
(5) applying aeronautical knowledge; and
(6) showing mastery of the aircraft within the standards outlined in this test book, with the successful outcome of a TASK never seriously in doubt.

UNSATISFACTORY PERFORMANCE

If, in the judgment of the examiner, the applicant does not meet the standards of performance of any TASK performed, the associated PILOT OPERATION is failed and therefore, the practical test is failed. The examiner or applicant may discontinue the test at any time after the failure of a PILOT OPERATION makes the applicant ineligible for the certificate or rating sought. The test will be continued only with the consent of the applicant. If the test is either continued or discontinued, the applicant is entitled to credit for only those TASKS satisfactorily performed. However, during the retest and at the discretion of the examiner, any TASK may be re-evaluated including those previously passed.

Consistently exceeding tolerances stated in the OBJECTIVE or failure to take prompt, corrective action when tolerances are exceeded, is unsatisfactory performance.

Any action, or lack thereof, by the applicant which requires corrective intervention by the examiner to maintain safe flight will be disqualifying. It is vitally important that the applicant and examiner use proper and effective scanning techniques to clear the area before performing maneuvers.

RECORDING UNSATISFACTORY PERFORMANCE

The term PILOT OPERATION is used in regulations to denote areas (procedures and maneuvers) in which the applicant must demonstrate competency prior to being issued a pilot certificate. This practical test book uses the terms AREA OF OPERATION and TASK to denote areas in which competency must be demonstrated. When a disapproval notice is issued, the examiner will record the applicant's unsatisfactory performance in terms of PILOT OPERATIONS appropriate to the practical test conducted.

NOTE

Material in FAA-S-8081-4A, Instrument Rating Practical Test Standards, will be in effect upon receipt and supersedes all previous editions. On March 1, 1989, FAA-S-8081-4, Instrument Rating Practical Test Standards will be obsolete.

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I. AREA OF OPERATION:

GROUND PHASE

A. TASK: OBTAINING WEATHER INFORMATION (IA and IH)

PILOT OPERATION - 4

REFERENCES: FAR Part 61; AC 00-6 and AC 00-45; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of aviation weather information by obtaining, reading, and analyzing the applicable items such as -

   a. weather reports and forecasts.
   b. pilot and radar reports.
   c. surface analysis charts.
   d. radar summary charts.
   e. significant weather prognostics.
   f. winds and temperatures aloft.
   g. freezing level charts.
   h. stability charts.
   i. severe weather outlook charts.
   j. constant pressure charts.
   k. constant pressure prognostics.
   l. tables and conversion graphs.
   m. SIGMETs and AIRMETs.
   n. ATIS reports.

2. Correctly analyzes the assembled weather information pertaining to the proposed route of flight and destination airport, and determines whether an alternate airport is required, and, if required, whether the selected alternate airport meets the regulatory requirement.

NOTE: Where current weather reports, forecasts, or other pertinent information is not available, this information will be simulated by the examiner in a manner which will adequately measure the applicant's competence.

B. TASK: CROSS-COUNTRY FLIGHT PLANNING (IA and IH)

PILOT OPERATION - 4

REFERENCES: FAR Parts 61 and 91; AC 61-27; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge by planning a cross-country flight conforming to the regulatory requirements for instrument flight rules within the airspace in which the flight will be conducted.
2. Exhibits adequate knowledge of the aircraft's performance capabilities by calculating the estimated time en route and total fuel requirement based upon such factors as -
   a. power settings.
   b. operating altitude or flight level.
   c. wind.
   d. fuel reserve requirements.
3. Selects and correctly interprets the current and applicable en route charts, SID (standard instrument departure), STAR (standard terminal arrival), and standard instrument approach procedure charts.
4. Obtains and correctly interprets applicable NOTAM information.
5. Determines the calculated performance is within the aircraft's capability and operating limitations.
6. Completes and files a flight plan in a manner that accurately reflects the conditions of the proposed flight.

C. TASK: AIRCRAFT SYSTEMS RELATED TO IFR OPERATIONS (IA and IH)

PILOT OPERATION - 4

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant exhibits adequate knowledge of the applicable aircraft anti-icing/deicing system(s) and their operating methods to include:

1. Airframe.
2. Propeller/intake.
3. Fuel system.
4. Pitot-static.

D. TASK: AIRCRAFT FLIGHT INSTRUMENTS AND NAVIGATION EQUIPMENT (IA and IH)

PILOT OPERATION - 4

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the applicable aircraft flight instrument system(s) and their operating characteristics to include -

   a. pitot-static.
   b. altimeter.
   c. airspeed indicator.
   d. vertical speed indicator.
   e. attitude indicator.
   f. horizontal situation indicator.
   g. magnetic compass.
   h. turn-and-slip indicator/turn coordinator.
   i. heading indicator.

2. Exhibits adequate knowledge of the applicable aircraft navigation system(s) and their operating methods to include –

   a. VHF omnirange (VOR).
   b. distance measuring equipment (DME).
   c. instrument landing system (ILS)/microwave landing system (MLS).
   d. marker beacon receiver/indicators.
   e. transponder/altitude encoding.
   f. automatic direction finding (ADF).

E. TASK: INSTRUMENT COCKPIT CHECK (IA and IH)

PILOT OPERATION – 5

REFERENCES: FAR Parts 61 and 91; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the preflight instrument, avionics, and navigation equipment cockpit check by explaining the reasons for the check and how to detect possible defects.

2. Performs the preflight instrument, avionics, and navigation equipment cockpit check by following the checklist appropriate to the aircraft flown.

3. Determines that the aircraft is in condition for safe instrument flight including –

   a. radio communications equipment.
   b. radio navigation equipment including the following, as appropriate, to the aircraft flown –
      (1) VOR/VORTAC receiving equipment.
      (2) ADF receiving equipment.
      (3) ILS/MLS receiving equipment.
   c. magnetic compass.
   d. heading indicator.
   e. attitude indicator.
   f. altimeter.
   g. turn-and-slip indicator/turn coordinator.
   h. vertical speed indicator.
   i. airspeed indicator.
   j. clock.
   k. power source for gyro-instruments.
   l. pitot heat.

4. Notes any discrepancies and determines whether the aircraft is safe for instrument flight or requires maintenance.

II. AREA OF OPERATION:

AIR TRAFFIC CONTROL CLEARANCES AND PROCEDURES

NOTE: The ATC clearance may be an actual or simulated ATC clearance based upon the flight plan.

A. TASK: AIR TRAFFIC CONTROL CLEARANCES (IA and IH)

PILOT OPERATION - 2

REFERENCES: FAR Parts 61 and 91; AC 61-27; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the elements of ATC clearances and pilot/controller responsibilities to include tower en route control and clearance void times.
2. Copies correctly, in a timely manner, the ATC clearance as issued.
3. Determines that it is possible to comply with ATC clearance.
4. Interprets correctly the ATC clearance received and, when necessary, requests clarification, verification, or change.
5. Reads back correctly, in a timely manner, the ATC clearance in the sequence received.
6. Uses standard phraseology when reading back clearance.
7. Sets the appropriate communication and navigation frequencies and transponder codes in compliance with the ATC clearance.

B. TASK: COMPLIANCE WITH DEPARTURE, EN ROUTE, AND ARRIVAL PROCEDURES AND CLEARANCES (IA and IH)

PILOT OPERATION - 2

REFERENCES: FAR Parts 61 and 91; AC 61-27; SID; En Route Low Altitude Charts; and STAR.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of SIDs, En Route Low Altitude Charts, STARs, and related pilot/controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and uses the appropriate communications frequencies; selects and identifies the navigation aids associated with the proposed flight.
4. Performs the appropriate aircraft checklist items relative to the phase of flight.
5. Establishes two-way communications with the proper controlling agency, using proper phraseology.
6. Complies, in a timely manner, with all ATC instructions and airspace restrictions.
7. Exhibits adequate knowledge of two-way radio communications failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, or clearance.
9. Maintains the applicable airspeed within 10 knots, headings within 10°, altitude within 100 feet, and tracks a course, radial, or bearing in a manner where the outcome is never seriously in doubt.

C. TASK: HOLDING PROCEDURES (IA and IH)

NOTE: Any reference to DME will be disregarded if the aircraft is not so equipped.

PILOT OPERATION - 2

REFERENCES: FAR Parts 61 and 91; AC 61-27; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of holding procedures.
2. Changes to the holding airspeed appropriate for the altitude or aircraft when 3 minutes or less from, but prior to arriving at, the holding fix.
3. Uses an FAA recommended entry procedure and holding pattern for a standard, nonstandard, published, or nonpublished holding pattern.
4. Recognizes arrival at the holding fix and initiates prompt entry into the holding pattern.
5. Complies with ATC reporting requirements.
6. Uses the proper timing criteria, where applicable, as required by altitude or ATC instructions.
7. Complies with pattern leg lengths when a DME distance is specified.
8. Uses proper wind correction procedures to maintain the desired pattern and to arrive over the fix as close as possible to a specified time.
9. Maintains the airspeed within 10 knots, altitude within 100 feet, headings within 10°, and radials and bearing in a manner where the outcome is never seriously in doubt.

III. AREA OF OPERATION:

FLIGHT BY REFERENCE TO INSTRUMENTS

NOTE: The examiner will require the performance of all TASKS. At least two of the TASKS, A through E as selected by the examiner, will be performed without the use of the attitude and heading indicators. TASK F should be performed using all available instruments; TASK G will be performed without the use of the attitude indicator.

A. TASK: STRAIGHT-AND-LEVEL FLIGHT (IA and IH)

PILOT OPERATION - 1

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the factors relating to attitude instrument flying during straight-and-level flight.
2. Maintains straight-and-level flight in the aircraft configuration specified by the examiner.
3. Maintains the heading within 10°, altitude within 100 feet, and airspeed within 10 knots.
4. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, power, and trim corrections.

B. TASK: CHANGE OF AIRSPEED (IA and IH)

PILOT OPERATION - 1

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the factors relating to attitude instrument flying during change of airspeeds in straight-and-level flight and in turns.
2. Establishes a proper power setting when changing airspeed.
3. Maintains the heading within 10°, angle of bank within 5° when turning, altitude within 100 feet, and airspeed within 10 knots.

4. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, power, and trim corrections.

C. TASK: CONSTANT AIRSPEED CLIMBS AND DESCENTS (IA and IH)

PILOT OPERATION - 1

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the factors relating to attitude instrument flying during constant airspeed climbs and descents.
2. Demonstrates climbs and descents at a constant airspeed, between specific altitudes in straight or turning flight as specified by the examiner.
3. Enters constant airspeed climbs and descents from a specified altitude, airspeed, and heading.
4. Establishes the appropriate change of pitch and power to establish the desired climb and descent performance.
5. Maintains the airspeed within 10 knots, heading within 10° or, if in a turning maneuver, within 5° of the desired bank angle.
6. Performs the level-off within 100 feet of the desired altitude.
7. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, power, and trim corrections.

D. TASK: RATE CLIMBS AND DESCENTS (IA and IH)

PILOT OPERATION - 1

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the factors relating to attitude instrument flying during rate climbs and descents.
2. Demonstrates climbs and descents at a constant rate between specified altitudes in straight or turning flight as directed by the examiner.

3. Enters rate climbs and descents from a specified altitude, airspeed, and heading.

4. Establishes the appropriate change of pitch, bank, and power to establish the desired rate of climb or descent.

5. Maintains the desired rate of climb and descent within 100 feet per minute, airspeed within 10 knots, heading within 10°, or if in a turning maneuver, within 5° of the desired bank angle.

6. Performs the level-off within 100 feet of the desired altitude.

7. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, power, and trim corrections.

E. TASK: TIMED TURNS TO MAGNETIC COMPASS HEADINGS (IA and IH)

NOTE: If the aircraft has a turn and slip indicator, the phrase "miniature aircraft of the turn coordinator" applies to the turn needle.

PILOT OPERATION - 1

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of procedures relating to calibrating the miniature aircraft of the turn coordinator, the operating characteristics and errors of the magnetic compass, and the performance of timed turns to specified compass headings.

2. Establishes indicated standard rate turns, both right and left.

3. Applies the clock correctly to the calibration procedure.

4. Changes the miniature aircraft position, as necessary, to produce a standard rate turn.

5. Makes timed turns to specified compass headings.

6. Maintains the altitude within 100 feet, airspeed within 10 knots, bank angle 5° of a standard or half-standard rate turn, and rolls out on specified headings within 10°.

F. TASK: STEEP TURNS (IA and IH)

PILOT OPERATION - 1

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the factors relating to attitude instrument flying during steep turns.
2. Enters a turn using a bank of approximately 45° for an airplane and 30° for a helicopter.
3. Maintains the desired angle of bank for either 180° or 360° of turn, both left and right.
4. Maintains altitude within 100 feet, airspeed within 10 knots, 5° of desired bank angle, and rolls out within 10° of the specified heading.
5. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, power, and trim corrections.

G. TASK: RECOVERY FROM UNUSUAL FLIGHT ATTITUDES (IA and IH)

NOTE: Any intervention by the examiner to prevent the aircraft from exceeding any operating limitations, or entering an unsafe flight condition, shall be disqualifying.

PILOT OPERATION - 5

REFERENCES: FAR Part 61; and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the factors relating to attitude instrument flying during recovery from unusual flight attitudes (both nose-high and nose-low).
2. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, and power corrections in the correct sequence to return the aircraft to a stabilized level flight attitude.

IV. AREA OF OPERATION:

NAVIGATION AIDS

NOTE: Any reference to DME arcs will be disregarded if the aircraft is not DME equipped.

A. TASK: INTERCEPTING AND TRACKING VOR/VORTAC RADIALS AND DME ARCS (IA and IH)

PILOT OPERATION - 2

REFERENCES: FAR Parts 61 and 91; AC 61-27; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the elements of VOR/VORTAC radial and DME arc interception and tracking.
2. Tunes and correctly identifies the VOR/VORTAC facility.
3. Sets and correctly orients the radial to be intercepted into the course selector or correctly identifies the radial on the RMI.
4. Intercepts the desired radial at a predetermined angle, inbound or outbound from a VOR/VORTAC facility.
5. Maintains, while intercepting and tracking VOR/VORTAC radials, the airspeed within 10 knots, altitude within 100 feet, and selected headings within 5°.
6. Applies proper correction to maintain a radial, allowing no more than three-quarter-scale deflection of the CDI or within 10° in case of an RMI.
7. Determines the aircraft position relative to the VOR/VORTAC facility.
8. Intercepts a DME arc and maintains that arc within 1 nautical mile.
9. Recognizes VOR/VORTAC receiver or facility failure, and, when required, reports the failure to ATC.

B. TASK: INTERCEPTING AND TRACKING NDB BEARINGS (IA and IH)

PILOT OPERATION - 2

REFERENCES: FAR Parts 61 and 91; AC 61-27; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the elements of NDB bearing interception and tracking.
2. Tunes and correctly identifies the NDB facility.
3. Sets the volume to a level that allows constant monitoring of the NDB facility.
4. Determines accurately the relative bearing of the NDB facility.
5. Intercepts a specific bearing to or from the NDB facility, using appropriate interception procedures.
6. Maintains, while intercepting and tracking NDB bearings the airspeed within 10 knots, altitude within 100 feet, selected heading within 5°.
7. Applies proper correction to maintain a bearing within 10°.
8. Determines the aircraft position relative to the NDB facility.
9. Recognizes ADF receiver or NDB facility failure, and, when required, reports the failure to ATC.

V. AREA OF OPERATION:

INSTRUMENT APPROACH PROCEDURES

NOTE: At least one of the instrument approaches listed in TASK A, B, or C must be demonstrated in an airplane or helicopter, as appropriate. At least one nonprecision approach must be demonstrated without the use of gyroscopic heading and attitude indicator. At the discretion of the examiner, the instrument approach(es) not selected for actual flight demonstration may be performed in a flight simulator or training device that meets the requirements of FAR Part 141.

A. TASK: VOR/VORTAC INSTRUMENT APPROACH PROCEDURE (IA and IH)

PILOT OPERATION - 3

REFERENCES: FAR Parts 61 and 91; AC 61-27; Standard Instrument Approach Procedure Chart; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the elements of a VOR/VORTAC instrument approach procedure.
2. Selects and complies with the appropriate VOR/VORTAC instrument approach procedure to be performed.
3. Establishes two-way communications with ATC, as appropriate, to the phase of flight or approach segment, and uses proper radio communications phraseology and technique.
4. Selects, tunes, identifies, and confirms the operational status of ground and aircraft navigation equipment to be used for the approach procedure.
5. Complies with all clearances issued by ATC or the examiner.
6. Recognizes if heading indicator and/or attitude indicator is inaccurate or inoperative, advises controller, and proceeds with approach.
7. Advises ATC or examiner anytime the aircraft is unable to comply with a clearance.

8. Establishes the appropriate aircraft configuration and airspeed considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of the flight.

9. Maintains, prior to beginning the final approach segment, altitude within 100 feet, heading within 10° and allows less than a full-scale deflection of the CDI or within 10° in the case of an RMI, and maintains airspeed within 10 knots.

10. Applies the necessary adjustments to the published MDA and visibility criteria for the aircraft approach category when required, such as –

    a. FDC and Class II NOTAMs.
    b. inoperative aircraft and ground navigation equipment.
    c. inoperative visual aids associated with the landing environment.
    d. National Weather Service (NWS) reporting factors and criteria.

11. Establishes a rate of descent and track that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made at a normal rate using normal maneuvers.

12. Allows, while on the final approach segment, no more than a three-quarter-scale deflection of the CDI or within 10° in case of an RMI, and maintains airspeed within 10 knots.

13. Maintains the MDA, when reached, within +100 feet, -0 feet to the MAP.

14. Executes the missed approach procedure when the required visual references for the intended runway are not distinctly visible and identifiable at the MAP.

15. Executes a normal landing from a straight-in or circling approach when instructed by the examiner.

B. TASK: NDB INSTRUMENT APPROACH PROCEDURE
(IA and IH)

PILOT OPERATION - 3

REFERENCES: FAR Parts 61 and 91; AC 61-27; Standard Instrument Approach Procedure Chart; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the elements of an NDB instrument approach procedure.
2. Selects and complies with the appropriate NDB instrument approach procedure to be performed.
3. Establishes two-way communications with ATC, as appropriate to the phase of flight or approach segment, and uses proper radio communications phraseology.
4. Selects, tunes, identifies, confirms, and monitors the operational status of ground and aircraft navigation equipment to be used for the approach procedure.
5. Complies with all clearances issued by ATC or the examiner.
6. Recognizes when heading indicator and/or attitude indicator is inaccurate or inoperative, advises controller and proceeds with approach.
7. Advises ATC or the examiner anytime the aircraft is unable to comply with a clearance.
8. Establishes the appropriate aircraft configuration and airspeed considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of flight.
9. Maintains, prior to beginning the final approach segment, the altitude within 100 feet, heading and bearing within 10°, and airspeed within 10 knots.
10. Applies the necessary adjustments to the published MDA and visibility criteria for the aircraft approach category when required, such as -
    a. FDC and Class II NOTAMs.
    b. inoperative aircraft and ground navigation equipment.

c. inoperative visual aids associated with the landing environment.
d. National Weather Service (NWS) reporting factors and criteria.

11. Establishes a rate of descent and track that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made at a normal rate using normal maneuvers.

12. Maintains, while on the final approach segment, a deviation of not more than 10° from the desired bearing, and maintains airspeed within 10 knots.

13. Maintains the MDA, when reached, within +100 feet, -0 feet to the MAP.

14. Executes the missed approach procedure when the required visual references for the intended runway are not distinctly visible and identifiable at the MAP.

15. Executes a normal landing from a straight-in or circling approach when instructed by ATC or the examiner.

C. TASK: ILS/MLS INSTRUMENT APPROACH PROCEDURE (IA and IH)

PILOT OPERATION - 3

REFERENCES: FAR Parts 61 and 91; AC 61-27; Standard Instrument Approach Procedure Chart; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the elements of an ILS/MLS instrument approach procedure.

2. Selects and complies with the appropriate ILS/MLS instrument approach procedure to be performed.

3. Establishes two-way communications with ATC, as appropriate to the phase of flight or approach segment, and uses proper radio communications phraseology and technique.

4. Selects, tunes, identifies, and confirms the operational status of ground and aircraft navigation equipment to be used for the approach procedure.

5. Complies with all clearances issued by ATC or the examiner.

6. Advises ATC or examiner anytime the aircraft is unable to comply with a clearance.

7. Establishes the appropriate aircraft configuration and airspeed, considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of flight.

8. Maintains, prior to beginning the final approach segment, desired altitude within 100 feet, heading or course within 10°, and airspeed within 10 knots.

9. Applies the necessary adjustments to the published DH and visibility criteria for the aircraft approach category when required, such as –

   a. FDC and Class II NOTAMs.
   b. inoperative aircraft and ground navigation equipment.
   c. inoperative visual aids associated with the landing environment.
   d. National Weather Service (NWS) reporting factors and criteria.

10. Establishes an initial rate of descent at the point where the electronic glide slope is intercepted, which approximates that required for the aircraft to follow the glide slope.

11. Allows, while on the final approach segment, no more than three-quarter-scale deflection of either the localizer or glide slope indications, and maintains the desired airspeed within 10 knots.

12. Avoids descent below the DH before initiating a missed approach procedure or transitioning to a normal landing approach.

13. Initiates immediately the missed approach procedure when, at the DH, the required visual references for the intended runway are not distinctly visible and identifiable.

14. Transitions to a normal landing approach when the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers.

D. TASK: MISSED APPROACH PROCEDURES (IA and IH)

PILOT OPERATION - 5

REFERENCES: FAR Parts 61 and 91; AC 61-27; Standard Instrument Approach Procedure Chart; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of missed approach procedures associated with standard instrument approaches.
2. Initiates the missed approach promptly by applying power, establishing a climb attitude, and reducing drag in accordance with the manufacturer's recommendations.
3. Reports to ATC beginning the missed approach procedure.
4. Complies with the published or alternate missed approach procedure.
5. Advises ATC or examiner anytime the aircraft is unable to comply with a clearance, restriction, or climb gradient.
6. Follows the recommended checklist items appropriate to the go-around procedure.
7. Requests, if appropriate, ATC clearance to the alternate airport, clearance limit, or as directed by the examiner.
8. Maintains the recommended airspeed within 10 knots; heading, course, or bearing within 10°; and altitude(s) within 100 feet during the missed approach procedure.

E. TASK: CIRCLING APPROACH PROCEDURE (IA and IH)

PILOT OPERATION - 3

REFERENCES: FAR Parts 61 and 91; AC 61-27; Standard Instrument Approach Procedures Chart; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the elements of a circling approach procedure.
2. Selects and complies with the appropriate circling approach procedure considering turbulence and wind shear and considering the maneuvering capabilities of the aircraft.
3. Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC and the examiner.
4. Does not exceed the visibility criteria or descend below the appropriate circling altitude until in a position from which a descent to a normal landing can be made.

F. TASK: LANDING FROM A STRAIGHT-IN OR CIRCLING APPROACH PROCEDURE (IA and IH)

PILOT OPERATION - 3

REFERENCES: FAR Parts 61 and 91; AC 61-27; and AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the pilot's responsibilities, and the environmental, operational, and meteorological factors which affect a landing from a straight-in or a circling approach.
2. Transitions at the DH, MDA, or VDP to a visual flight condition, and performs a normal landing with normal maneuvering.
3. Adheres to all ATC (or examiner) advisories such as: NOTAMs, wind shear, wake turbulence, runway surface, braking conditions, and other operational considerations.
4. Completes appropriate checklist items for the prelanding and landing phase.

5. Maintains positive aircraft control throughout the complete landing maneuver.

VI. AREA OF OPERATION:

INSTRUMENT FLIGHT IN A MULTIENGINE AIRCRAFT

NOTE: An instrument approach performed under Area of Operation V in a multiengine aircraft, which is followed by a missed approach, satisfies the requirement of TASK B of Area of Operation VI.

A. TASK: ENGINE FAILURE DURING STRAIGHT-AND-LEVEL FLIGHT AND TURNS (IA and IH)

PILOT OPERATION - 5

REFERENCES: FAR Part 61; AC 61-21 and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the procedures used if engine failure occurs during straight-and-level flight and turns while on instruments.
2. Recognizes engine failure simulated by the examiner during straight-and-level flight and turns.
3. Sets all engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Establishes the best engine-inoperative airspeed and trims the aircraft.
5. Verifies the accomplishment of prescribed checklist procedures for securing the inoperative engine.
6. Establishes and maintains the recommended flight attitude, as necessary, for best performance during straight-and-level and turning flight.
7. Attempts to determine the reason for the engine failure.
8. Monitors all engine control functions and makes necessary adjustments.
9. Maintains the specified altitude within 100 feet, if within the aircraft's capability, airspeed within 10 knots, and the desired heading within 10°.
10. Assesses the aircraft's performance capability and decides an appropriate action to ensure a safe landing.

11. Avoids imminent loss of aircraft control, or attempted flight contrary to the engine-inoperative operating limitations of the aircraft.

B. TASK: INSTRUMENT APPROACH - ALL ENGINES OPERATING (IA and IH)

PILOT OPERATION - 3

REFERENCES: FAR Part 61; AC 61-21 and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of cockpit management used on an instrument approach in a multiengine aircraft.
2. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.
3. Requests and receives an actual or a simulated ATC clearance for an instrument approach.
4. Follows the actual or simulated ATC clearances and advisories and the published instrument approach procedure.
5. Establishes a rate of descent that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made straight-in or circling.
6. Maintains the specified airspeed within 10 knots and altitude within 100 feet, prior to the final approach fix.
7. Allows, while on final approach segment, no more than three- quarter-scale deflection of either the localizer or glide slope indications or within 10° of the NDB final approach course.
8. Avoids descent below the published minimum altitude or exceeding the visibility criteria for the aircraft approach category when circling.
9. Executes a missed approach procedure at the designated MAP and follows the appropriate aircraft checklist procedures.

C. TASK: INSTRUMENT APPROACH - ONE ENGINE INOPERATIVE (IA and IH)

PILOT OPERATION - 5

REFERENCES: FAR Part 61; AC 61-21 and AC 61-27.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge by explaining the procedures used during an instrument approach in a multiengine aircraft with one engine inoperative.
2. Recognizes promptly engine failure simulated by the examiner.
3. Sets all engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Establishes the best engine-inoperative airspeed and trims the aircraft.
5. Verifies the accomplishment of prescribed checklist procedures for securing the inoperative engine.
6. Establishes and maintains the recommended flight attitude and configuration for the best performance for all maneuvering necessary for the instrument approach procedures.
7. Attempts to determine the reason for the engine failure.
8. Monitors all engine control functions and makes necessary adjustments.
9. Requests and receives an actual or a simulated ATC clearance for an instrument approach.
10. Follows the actual or a simulated ATC clearance for an instrument approach.
11. Establishes a rate of descent that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made straight-in or circling.
12. Maintains, where applicable, the specified altitude within 100 feet (if within the aircraft's capability), the airspeed within 10 knots, and the heading within 10°.

13. Avoids imminent loss of aircraft control, or attempted flight contrary to the engine-inoperative operating limitations of the aircraft.

14. Complies with the published criteria for the aircraft approach category when circling.

15. Allows, while on final approach segment, no more than three-quarter-scale deflection of either the localizer or glide slope indications, or within 10° of the NDB final approach course.

16. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.

17. Completes a safe landing.

PRACTICAL TEST CHECKLIST

INSTRUMENT RATING

(IA AND IH)

(SUGGESTED)

APPLICANT'S NAME _____

EXAMINER'S NAME _____

DATE _____

TYPE CHECK _____

I. GROUND PHASE

- ☐ **A.** Obtaining Weather Information
- ☐ **B.** Cross-Country Flight Planning
- ☐ **C.** Aircraft Systems Related to IFR Operations
- ☐ **D.** Aircraft Flight Instruments and Navigation Equipment
- ☐ **E.** Instrument Cockpit Check

II. AIR TRAFFIC CONTROL CLEARANCES AND PROCEDURES

- ☐ **A.** Air Traffic Control Clearances
- ☐ **B.** Compliance with Departure, En Route, and Arrival Procedures and Clearances
- ☐ **C.** Holding Procedures

III. FLIGHT BY REFERENCE TO INSTRUMENTS

- ☐ **A.** Straight-and-Level Flight
- ☐ **B.** Change of Airspeed
- ☐ **C.** Constant Airspeed Climbs and Descents
- ☐ **D.** Rate Climbs and Descents
- ☐ **E.** Timed Turns to Magnetic Compass Headings
- ☐ **F.** Steep Turns
- ☐ **G.** Recovery from Unusual Flight Attitudes

IV. NAVIGATION AIDS

- ☐ **A.** Intercepting and Tracking VOR/VORTAC Radials and DME Arcs
- ☐ **B.** Intercepting and Tracking NDB Bearings

V. INSTRUMENT APPROACH PROCEDURES

- ☐ **A.** VOR/VORTAC Instrument Approach Procedure
- ☐ **B.** NDB Instrument Approach Procedure
- ☐ **C.** ILS/MLS Instrument Approach Procedure

- ☐ **D.** Missed Approach Procedures
- ☐ **E.** Circling Approach Procedure
- ☐ **F.** Landing from a Straight-in or Circling Approach Procedure

VI. INSTRUMENT FLIGHT IN A MULTIENGINE AIRCRAFT

- ☐ **A.** Engine Failure During Straight-and-Level Flight and Turns
- ☐ **B.** Instrument Approach — All Engines Operating
- ☐ **C.** Instrument Approach — One Engine Inoperative

APPLICANT'S PRACTICAL TEST CHECKLIST

(SUGGESTED)

APPOINTMENT WITH INSPECTOR OR EXAMINER:

NAME _____

TIME/DATE _____

ACCEPTABLE AIRCRAFT

- ☐ View-limiting device
- ☐ Aircraft Documents:
  - Airworthiness Certificate
  - Registration Certificate
  - Operating Limitations
- ☐ Aircraft Maintenance Records:
  - Airworthiness Inspections
- ☐ FCC Station License

PERSONAL EQUIPMENT

- ☐ Current Aeronautical Charts
- ☐ Computer and Plotter
- ☐ Flight Plan Form
- ☐ Flight Logs
- ☐ Current AIM

PERSONAL RECORDS

- ☐ Pilot Certificate
- ☐ Medical Certificate
- ☐ Completed FAA Form 8710-1, Application for an Airman Certificate and/or Rating
- ☐ AC Form 8080-2, Airman Written Test Report
- ☐ Logbook with Instructor's Endorsement
- ☐ Notice of Disapproval (if applicable)
- ☐ Approved School Graduation Certificate (if applicable)
- ☐ Examiner's Fee (if applicable)

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